



The Economic Return on PCCD's Investment in Research-based Programs:

A COST-BENEFIT ASSESSMENT OF DELINQUENCY PREVENTION
IN PENNSYLVANIA

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**THE PREVENTION RESEARCH CENTER
FOR THE PROMOTION OF HUMAN DEVELOPMENT**

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Executive Summary

Over the last decade, the Pennsylvania Commission on Crime and Delinquency (PCCD) has made a considerable investment in supporting community crime and delinquency prevention through the funding of proven-effective strategies under the state's Research-based Programs Initiative. These evidence-based prevention programs, implemented in over 120 communities throughout the Commonwealth, have been shown in rigorous evaluation studies to reduce delinquency, violence and aggression, drug and alcohol use, and other youth behavior problems, and to promote positive youth development and stronger families and communities. Although these model programs have been effective at addressing youth crime, policymakers must consider the investment of public resources necessary to support these programs, and balance that investment with funds required to support the formal criminal justice system (i.e., police, courts and corrections costs).

Recently, economists and policy researchers have begun to conduct cost-benefit analyses of prevention and intervention efforts to determine whether the potential benefits of a variety of strategies justify the funds necessary to implement them. In this report, ***The Economic Return on PCCD's Investment in Research-based Programs: A cost-benefit assessment of delinquency prevention in Pennsylvania***, we examine the return-on-investment for seven research-based programs that are supported by the PCCD and in widespread use throughout Pennsylvania.

Using conservative and widely-accepted methodology, we determine that these programs not only pay for themselves, but represent a potential \$317 million return to the Commonwealth in terms of reduced corrections costs, welfare and social services burden, drug and mental health treatment, and increased employment and tax revenue. The programs described in this report produce returns of between \$1 and \$25 per dollar invested, and can generate cost savings as great as \$130 million for a single program.

The evidence of the substantial economic benefits of these prevention programs, coupled with the proof of their impact on delinquency and crime prevention, comes at a critical time. The cost of Pennsylvania's criminal and juvenile justice system is increasing dramatically, and the state is currently facing a corrections crisis, with county jails and state prisons operating at well-over capacity. The Pennsylvania Department of

Corrections has requested over \$700 million to construct new prisons and increase available prison bedspace, but without slowing the pace of prison admissions even that titanic investment will see prisons overcrowded again within five years.

In contrast, increased support for effective prevention programs throughout Pennsylvania could generate reductions in both youth and adult corrections populations and save the Commonwealth millions of dollars. A reduction of only 5% in the number of juveniles held in long-term custody represents a potential savings of over \$9 million; a 5% reduction in the adult prison population would save an additional \$75 million.

With the potential impact of empirically-supported prevention so clearly established, a greater investment in these programs would be a wise investment that will pay dividends well into the future.

This report was prepared by the Prevention Research Center at Penn State University. The full text of the report is available through the PRC website at: **www.prevention.psu.edu**.

For more information on PCCD's Research-based Programs Initiative, please contact the Pennsylvania Commission on Crime and Delinquency's Office of Juvenile Justice and Delinquency Prevention at 800-692-7292, or visit its website at **www.pccd.state.pa.us**.

Return-on-investment for Prevention Programs in Pennsylvania

	Big Brothers/Sisters	Lifeskills Training	Multidimensional Treatment Foster Care	Multisystemic Therapy	Functional Family Therapy	Nurse-Family Partnership	Strengthening Families Program 10-14
Per dollar return on investment	\$1.01	\$25.72	\$11.14	\$3.61	\$14.56	\$3.59	\$7.82
Benefits minus costs per person served	\$54	\$808	\$79,331	\$16,716	\$32,707	\$37,367	\$6,541
Estimated number of programs statewide	28	100	3	12	11	25	15
Estimated average economic benefit per community	\$13,500	\$161,600	\$475,986	\$2,507,400	\$12,395,953	\$4,782,976	\$872,133
Total (current) potential economic benefit statewide	\$378,000	\$16,160,000	\$1,427,958	\$30,088,800	\$136,355,483	\$119,574,400	\$13,082,000

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BACKGROUND:

PCCD's Investment in Research-based Prevention

Pennsylvania has long been a leader in recognizing the critical role of prevention in a comprehensive strategy to address juvenile delinquency, youth violence, and substance use. As the lead state agency in supporting a broad delinquency prevention agenda, the Pennsylvania Commission on Crime and Delinquency has provided considerable grant funding to local communities to adopt and implement specific prevention and intervention programs that have been shown to be effective in rigorous research studies. Since 1998, the PCCD's Office of Juvenile Justice and Delinquency Prevention has provided over \$60 million to support proven-effective prevention strategies in over 120 Pennsylvania communities. By promoting the use of these research-based programs, the PCCD has taken a deliberate policy position to make more efficient use of state and federal resources by directing them to the strategies that are most likely to impact delinquency.

In a recent report, we detailed the programs funded under the PCCD's Research-based Programs Initiative, and described some of the positive outcomes related to delinquency and youth substance use being seen in communities across the Commonwealth.¹ We now turn our attention to an equally important research question: has this investment in research-based prevention been cost-effective?

¹ Meyer-Chilenski, S., Bumbarger, B.K., Kyler, S., & Greenberg, M. (2007). *Reducing Youth Violence and Delinquency in Pennsylvania: PCCD's Research-based Programs Initiative* Prevention Research Center, Pennsylvania State University.

INTRODUCTION:

The Importance of Prevention from a Monetary Standpoint

A “cost-effective” program is doubly appealing from a societal standpoint if such a program can successfully prevent or reduce delinquency without creating a financial burden to taxpayers – or better yet providing fiscal benefits to taxpayers. The potential economic benefits of a successful prevention or intervention program can be readily demonstrated to policymakers and the public in general. Programs that both reduce problems identified by local communities while also reducing costs to society are especially important as state and local governments become more accountable for both costs and outcomes. It is not difficult to understand how a program that diverts someone from a criminal path will spare society the justice system expenses associated with processing offenses (from police and court costs to prison costs); in such a case the necessary resources for the prevention program are usually considered well worth the investment. Given typical budget constraints, policymakers seek to fund crime prevention programs that will at least “pay for themselves” while delivering the necessary services for their community. Although the adage that “an ounce of prevention is worth a pound of cure” is well known, it is doubtful most policymakers fully understand the potential taxpayer benefits possible from an effective prevention effort. However, economics experts are now demonstrating how prevention programs may actually provide a substantial return-on-investment.²

² See, for example, Greenwood, P. W., Model, K. E., Rydell, C. P., & Chiesa, J. (1998). *Diverting children from a life of crime: Measuring costs and benefits* (rev. ed.). Santa Monica, CA: RAND.

A thorough economic analysis can shed light on the potential for fiscal benefits of successful prevention programs beyond the obvious cost savings (such as savings from a prevented incarceration). Such evaluations estimate how program outcomes may lead to further economic gains in areas such as reduced victim costs, fiscal benefits to family members associated with the program participant, or benefits to the larger community. Using associations established in previous research, economic analyses can project cost savings for a certain outcome (e.g., lifetime earnings) based on change in another outcome (e.g., reduced level of substance abuse). Thus, the effects of a prevention program in adolescence can be linked to economic gains over the course of that person's lifetime.³

Clearly, the potential cost-effectiveness of prevention programs must be weighed against the general needs and capabilities of providers serving the community and other practical considerations for those being targeted. Although evaluators judge programs' effectiveness based on the degree to which the intervention affects key outcomes of targeted participants, the most effective programs are not always those that are most cost-effective; likewise, the most affordable program may have little or no effect on delinquency.

Thorough economic evaluation has shown that preventing just one career criminal can save society over \$2 million.⁴ It is easy to see how a prevention program that costs \$1.5 million to deliver services to 100 participants would be successful from an economic standpoint even if it only prevents 1% of program participants from a life of crime. Politicians and policymakers are perpetually evaluating which prevention and intervention programs are most necessary and affordable for the communities they serve. Cost-effectiveness evaluation is one criterion that can help decision makers determine the most appropriate programs based on both the needs and resources of their community.

³ Haddix A.C., Teutsch S.M., & Corso P.S. (Eds.) (2003). *Prevention Effectiveness: A Guide to Decision Analysis and Economic Evaluation*. (2nd ed.). Oxford, England: Oxford University Press.

⁴ Cohen, M.A. (2005). *The Costs of Crime and Justice*. New York: Routledge.

This report considers the cost-effectiveness potential for seven research-based programs funded by the PCCD. These programs are highlighted because they represent the bulk of the PCCD's investment in prevention programming and because there are existing longitudinal data on program outcomes from which cost-benefit estimates can be derived. For these programs, we provide projected economic impact calculations using data from a landmark assessment of costs and benefits performed by the Washington State Institute for Public Policy (WSIPP)⁵ and applying those figures to data on implementation of the programs in Pennsylvania.

⁵ Aos, S., Leib, R., Mayfield, J., Miller, M., & Pennucci, A. (2004). *Benefits and Costs of Prevention and Early Intervention Programs for Youth*. #04-07-3901.

Aos, S., Miller, M., & Drake, E. (2006). *Evidence-Based Public Policy Options to Reduce Future Prison Construction, Criminal Justice Costs & Crime Rates*. Olympia: Washington State Institute for Public Policy.

Considering Costs and Benefits in Justice System Funding

Current Costs of Crime and Corrections in Pennsylvania

The costs for processing crime and incarceration are considerable, not to mention potential costs related to recidivism after prison release. For severe crimes, the costs related to the original crime that led to imprisonment (even if a second crime never occurs) are enormous considering both present and future (projected) expenditures over and above incarceration costs.

In Pennsylvania, a total of 4,467 juvenile court dispositions resulted in placement in potentially long-term custody in 2006.⁶ These placements include state-run secure facilities, a variety of private facilities, Youth Development Centers operated by the state Department of Public Welfare, and long-term drug and alcohol treatment placements (note: this figure does not include dispositions resulting in placement in boot camps, wilderness programs, group homes, or foster care, and could reflect multiple dispositions for the same juvenile). Costs for these placements vary considerably, but as an illustration it currently costs over \$142,000 to place a juvenile in a DPW-operated Youth Development Center (YDC) for one year, while a one-year placement in a private facility is significantly less expensive, averaging about \$54,000 per youth. In 2006, the median length

⁶ Pennsylvania Juvenile Court Judges Commission. (2006). *Pennsylvania Juvenile Court Dispositions*. Retrieved online at http://www.jcjc.state.pa.us/jcjc/lib/jcjc/statistics/2006/2006_part_1.pdf on March 21, 2008.

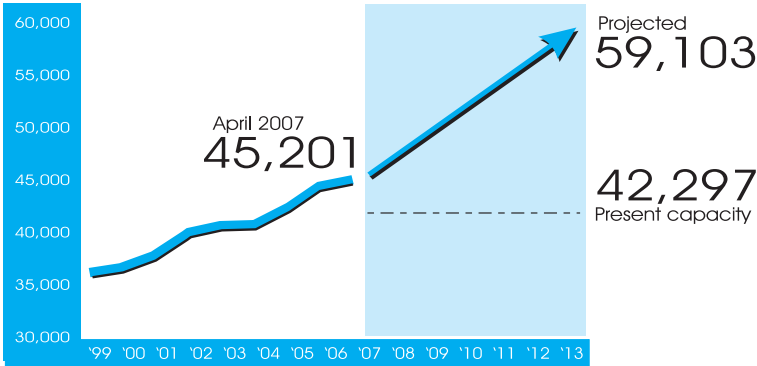
of stay in an out-of-home placement was 7.1 months.⁷ With YDC placements representing about 17% of the 4,467 placements referenced above and assuming the remainder fall within the average cost of private facilities, and given the median length of stay, this represents an annual system cost of nearly \$183 million for long-term youth placement alone. Preventing only 5% of those new out-of-home placements each year would represent an annual savings of over \$9 million.

Likewise, the cost of adult corrections in Pennsylvania is skyrocketing, and the inmate population has already outpaced the available prison bedspace. A recent report from the Council of State Governments found the following:

- Pennsylvania's prisons were already operating at 115% of their inmate capacity by the end of 2006.
- The state prison population increased 24% between 1999 and 2007, and is projected to increase another 30% over the next five years.
- Prison population growth exponentially outpaced the rate of general population growth.
- The Department of Corrections' budget for FY 2008-2009 requests nearly \$700 million for NEW prison construction, which will generate an additional \$177 million in ongoing operating costs.
- Even if the General Assembly approves this enormous investment in prison construction, at the projected rate of prison population growth the DOC will be even MORE overcrowded (operating at 118%) within five years.

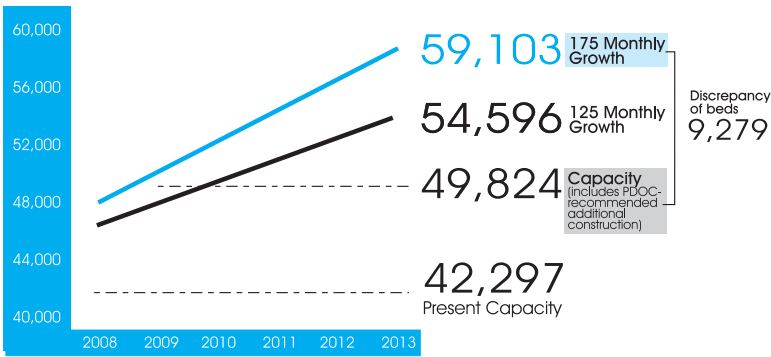
⁷ Pennsylvania Juvenile Court Judges Commission. Statewide Outcome Measures 2006.

Figure 1. Pennsylvania Department of Corrections Inmate Population: Historical Growth (FY 1999 - 2007) and Projected Growth (FY 2007 - 2013)



Source: Council of State Governments Justice Center. (2007). *Increasing Public Safety and Generating Savings: Options for Pennsylvania Policymakers*. Retrieved at www.justicecenter.csg.org on Feb. 24, 2008.

Figure 2. Projected PDOC Population Assuming Population Growth Rate of 2006 (175 Monthly Growth) and Lower Growth Rate (125 Monthly Growth)



Source: Council of State Governments Justice Center. (2007). *Increasing Public Safety and Generating Savings: Options for Pennsylvania Policymakers*. Retrieved at www.justicecenter.csg.org on Feb. 24, 2008.

While the report of the Council of State Governments on Pennsylvania's prison population explosion has been helpful in raising awareness of the impending corrections budget crisis, the options proposed to address the problem primarily involve increasing community corrections, increased parole releases, and sentencing reforms. The potential to reduce the prison population by preventing and reducing crime is wholly absent from the current policy discussion. With the annual cost of incarcerating an adult inmate at \$33,000 and given the 2007 inmate population of 45,201, a reduction in the adult inmate population of just 5% would translate to a cost savings of over \$74 million.

Pennsylvania spends an increasing percentage of its budget on corrections and thus fewer dollars are available to provide other needed services. According to a recent report from the Pew Center on the States, during 2007 the increase in Pennsylvania's prison population was among the highest in the nation, and this prison population growth is taking an increasing toll on other budget priorities. While states have seen a 127% increase in corrections costs over the past 20 years, spending on higher education has only increased 21% during that period (costs adjusted for inflation). In the case of Pennsylvania this change is dramatic. The ratio of prison spending to higher education spending in Pennsylvania increased 300% from 1987 to 2007.⁸ This dramatic change in proportional costs of our prison system represents an alarming trend with major implications for public policy.

⁸ Pew Center on the States. (2008). *One in 100: Behind bars in America 2008*. The Pew Charitable Trusts, Washington, DC.

The Place of Prevention in Justice System Funding

When deciding how to fund crime prevention efforts, policymakers must balance funding for prevention efforts and funds that are spent on the formal justice system. Although studies have shown that the general public supports funding for prevention efforts, some policymakers are skeptical of the effectiveness of crime prevention programs, especially since program outcomes may not be seen for some period of time and because program successes may involve less direct or visible outcomes. Some policymakers actually view incarceration as the ultimate act of prevention – a person behind bars is virtually guaranteed not to commit a crime during their sentence; however, this ignores the fact that virtually all offenders eventually return to the community, with many representing a higher risk than when they left. Considering that nearly 67% of inmates released from state prisons are rearrested within three years⁹, the sheer number of new prison admissions each year added to the number of recidivist admissions equates to a dramatic increase in costly incarceration that cannot continue to be borne by public resources. Clearly there is a need for large-scale prevention efforts to stem the tide of incarcerations. If history is our guide, there is no way that Pennsylvania can use incarceration as an effective form of prevention; it is very costly and often fails to reduce crime, pain, and suffering. The question for policymakers, then, is whether the investment in prevention is cost-effective.

Diversion from a criminal path is perhaps the most successful outcome for a prevention program aimed at delinquent youth. The alternative outcome of becoming a “career criminal” has obvious emotional, familial, and societal costs that can extend a lifetime and affect multiple lives and entire communities. Given the magnitude of costs involved in crime *after* it occurs, it is easy to see how effective prevention programs may be economically viable.

⁹ U.S. Department of Justice, Bureau of Justice Statistics. (2006). *Reentry Trends in the U.S.* Washington, DC.

Costs incurred by the criminal justice system include those for the arrest process (including police costs), adjudication, and incarceration. Such amounts can be substantial even for one individual. Economists also consider victim costs in terms of tangible and intangible losses. Tangible losses are those that easily translate into fiscal disadvantage: medical costs, lost income, and property loss—all incurred because a crime was committed. Intangible losses are pain and suffering (often long term) related to being a victim of a crime. Intangible losses are often not included in calculations of the economic impact of a crime, although it is easy to see how they might be. (Economists often put a monetary value on reduction in quality of life as represented by a quality-of-life index.)

Researchers point to three other areas that may be positively impacted in a monetary sense by successful prevention programs, regardless of whether the program specifically targets delinquency and violence.¹⁰ First, increased future earnings from participants will lead to increased tax revenues across lifetimes. Second, decreased public assistance expenditures may be realized due to successful intervention. Individuals may be less likely to require welfare and other forms of public assistance; subsequent administrative costs will likewise be lower due to the lower burden on social services agencies. Third, other special programs aimed at those in need, including special education programs (in the case of a successful educational intervention for children), health services, and homeless shelters or substance abuse treatment centers will also be less burdened.

¹⁰ Karoly, L. A., Greenwood, P. W., Everingham, S. S., Hoube, J., Kilburn, M. R., Rydell, C. P., Sander, M., & Chiesa, J. (1998). *Investing in our children: What we know and don't know about the costs and benefits of early childhood interventions*. Santa Monica, CA: RAND.

Program Effects Used to Monetize Program Benefits

Evaluations of prevention and intervention programs can involve assessment of many different outcomes. Economic evaluations involve the subset of those outcomes that can be linked to monetary amounts. Here it is important to review a key distinction in two types of economic evaluations: cost-effectiveness evaluation versus cost-benefit evaluation. For the sake of this report, “cost-effectiveness” refers to economic evaluation in general, but is often terminology for an assessment of the cost of achieving the change in an outcome even if that outcome cannot be directly monetized (such as changing the likelihood to be diagnosed with conduct disorder). *Cost-benefit* analyses examine the actual changes in outcome costs that occur in association with an intervention—for instance, reduction in arrests or reduced welfare use, both of which have direct monetary consequences.

Researchers typically assess several categories of outcomes in a cost-benefit assessment of prevention programs, including crime, welfare/social programs, drug treatment, education, and other government programs. While many economic outcomes involve those that are of a fiscal nature (e.g., reduced welfare use), other individual outcomes with a calculable impact on monetary change are also included in the evaluation (e.g., increased test scores inferring a higher future income). Cost-benefit analysis focuses on multiple outcomes and, as noted above, takes into account the relationship between key outcomes (such as how changes in future employment rates and thus lifetime earnings can be projected based

on a reduction in adolescent substance abuse rates). The following list summarizes key outcomes typically considered in a cost-benefit analysis of child and youth prevention and intervention efforts:

- Crime
- Education (including graduation rates, test scores, post-high school education, special education rates, grade repetition)
- Employment rates and earning potential
- Substance use (abuse of illicit drugs, alcohol and/or tobacco)
- Public assistance (including welfare receipt or other social services such as foster care)
- Teen birth rates
- Child abuse and neglect
- Health and mental health service needs

The outcomes evaluated may differ based on the age of the participant (a program delivered to pre-teens may not be able to assess employment unless follow-up measures are attained). Each type of monetary outcome can involve many specific calculations. The WSIPP formulation of the cost of a criminal offense included many steps and estimates across many systems, including the following:

- Police and Sheriff office costs to process arrest
- Court and county prosecutor costs
- Juvenile detention, sentencing and probation costs
- Adult jail and sentencing costs
- Adult community supervision costs
- Department of Corrections institutional and post-prison supervision costs
- Victim costs (out-of-pocket and quality-of-life costs)

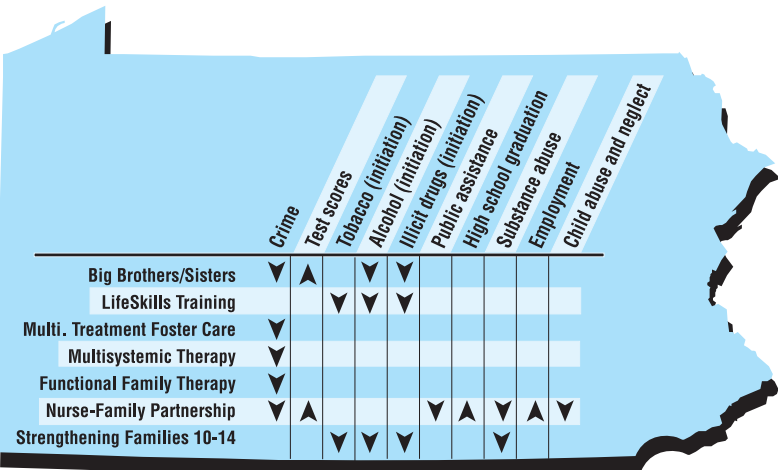
These estimates differentiate across the type of crime and the types of resources involved in processing the crime.

The cost-benefit estimates carried out by WSIPP involved in-depth investigations of both program effects and economic consequences of program participation. The latter were based on state-specific cost estimates as well as national cost estimates.

Program effectiveness levels were formally assessed through a meta-analysis which involves pooling the results of multiple independent and scientifically rigorous program evaluations and deriving an overall program effectiveness rate. This process combined all program effects reported in research dating from 1970 to the present and included results from any study that demonstrated rigorous design quality. If program evaluations used a less rigorous research approach, or were carried out in research settings that might not reflect the challenges of 'real-world' settings, their results were either excluded from the meta-analysis or their contribution toward pooled results was down-weighted. Because study results were weighted to best represent the programs as they would exist in typical implementation settings, the program effect estimates should be considered conservative estimates in terms of the true efficacy of the interventions. In other words, results will reflect outcomes for those who were successfully treated and thus average in the effects for those who were not motivated to participate fully in the programs (i.e., results generally represent an "intent-to-treat" approach).

"Effect sizes" were calculated across multiple studies to represent the "potency" of program impact for any outcome that could be monetized. These estimates represent the positive or negative impact of the intervention in a standardized metric that can be used across studies. If a meta-analytic effect size for a program (combining results from multiple studies) was found to be statistically significant, the program was determined to be effective at altering the outcome of interest, and the magnitude of the effect was used to calculate the degree of economic benefit that would result. The following figure presents the outcomes assessed in meta-analyses for the programs featured in this report (these outcomes represent what the program aims to address in its participants but moreover are those outcomes that were assessed in research evaluations).

Economic outcomes assessed in meta-analyses, by program



Summary of Cost-Benefit Calculation Methods Used for This Report

Program benefit amounts were estimated using an economic evaluation of the savings resulting from the intervention based on real outcomes observed (e.g., fewer arrests), as well as dollars projected from known economic associations (e.g., the increased future income resulting from having a high school degree). The necessary calculations are complicated yet understandable. In simplest terms, equations involve quantifying the fiscal benefits across monetarily relevant outcomes by the magnitude of the program's impact and then deducting the program costs, and making the appropriate economic adjustments for time since intervention. For a certain category such as education, the fiscal calculations are based on any education outcomes that the prevention program has been shown to impact. Values would be estimated for the amount of increased future income that is expected as a result of program participation, including increased rates of high school graduation, increased number of years in school, and/or higher test scores (the degree of program impact would affect the magnitude that these outcomes change the economic benefit). Marginal costs would also be estimated for higher rates of special education use or grade retention among comparison/non-program participants. Costs and benefits related to education and subsequent future earnings may also be related to non-education outcomes. For instance, if the prevention program also demonstrated having an impact on reducing child abuse and neglect rates, the effect size for that outcome would be factored into the likelihood of high school graduation. In this case, the effect size for that outcome would be translated into a probability of a lifetime of child abuse and neglect,

which in turn would influence the probability of high school graduation. In general, it is important to recognize the relationship between different outcomes when projecting economic costs and benefits.

Benefit estimates incorporate future savings based on existing evaluations plus projection models that use the observed outcomes as inputs. For instance, the value of preventing a future criminal offense uses distributions of the probabilities of certain offense types (murder, robbery, drug crime, etc.) to determine the likely future felonies for a certain population. For substance abuse, calculations involve lifetime cost projections given a probability of long-term drug abuse related to the age of first use. Also factored into this are fiscal costs to society resulting from a successful intervention, e.g., education costs expended for a subject that otherwise would have dropped out of the education system. Future benefits were discounted (using a 3% discount rate) to adjust for the length of time from delivery of the intervention to realization of the cost savings. Dollar amounts were applied to any outcomes showing a statistically significant program effect.

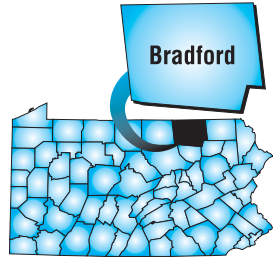
Another feature of the estimates of program benefits is that they incorporate estimates of savings for other likely affected family members. These amounts are considered as secondary program participants. Such outcomes are important, especially for interventions that target families—the primary participant might be the mother but based on the nature of the behaviors being addressed children are obvious secondary benefactors of program effects.

Return-on-investment for Prevention Programs in Pennsylvania

The following pages list the estimated return on investment based on cost-benefit evaluations for seven specific programs in widespread use throughout Pennsylvania. Program totals are projected from the average economic outcome per-participant. We present the numbers for specific sites in Pennsylvania that have been funded by the PCCD to implement these programs (as case-study examples), as well as statewide figures based on the estimated number of program replications and participants currently being implemented across the Commonwealth. Dollar amounts were adjusted to 2007 dollars using the Consumer Price Index. Economic benefits are presented both in terms of per-participant average economic gain, as well as projected to the treated population as a whole. It is important to note that these economic gains represent monetary benefits to society and the participants together. That is, the portion of economic gain realized to the taxpayer is a subset of the total amount.

Big Brothers/Big Sisters

The Big Brothers/Big Sisters program aims to prevent violence, delinquency, and other behavior problems through the development of a positive, long-term, professionally supported youth-adult relationship for individual children. Youth are referred to BBBS by parents or teachers. BBBS recruits, trains, and matches adult volunteers (i.e., Bigs) with the referred youth (i.e., Littles). Bigs and Littles are encouraged to spend at least one hour together each week, and Bigs are required to make a minimum one-year commitment to the mentoring relationship.



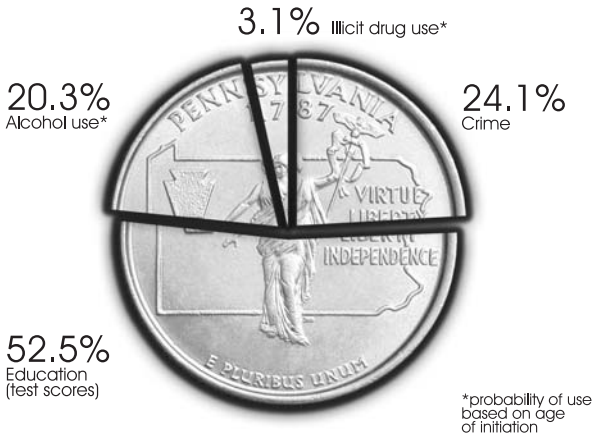
Example site:	Bradford County
Number served:	11 youth
Benefit minus costs per child served:	\$54
Per dollar return on investment:	\$1.01
Total economic benefit resulting from Bradford County implementation:	\$595
Estimated number of Big Brothers/Big Sisters programs statewide:	28
Estimated number of youth being served statewide:	7000
Total potential economic benefit statewide:	\$378,000

ECONOMIC BENEFITS ARE BASED ON THE PROGRAM'S SIGNIFICANT LIKELIHOOD TO:

- reduce the following outcomes: crime, and substance abuse
- increase the following outcomes: test scores

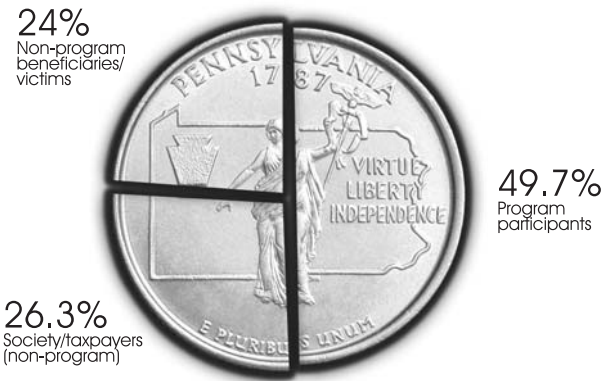
The benefits for this program mostly pay for the cost of the program (with a minimal return on investment), although the program has an impact on a variety of outcomes.

Big Brothers/Big Sisters
Percent economic benefit by outcome



24% of economic benefits among the above outcomes are based on crime outcomes. Over half of the economic benefits (52%) are related to increased test scores.

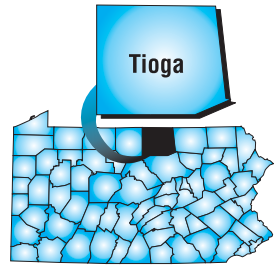
Percent economic benefit for participants/society



Half of the economic benefit across all outcomes goes to non-program participants (taxpayers and victims).

LifeSkills Training

The LifeSkills Training (LST) curriculum aims to prevent substance abuse and violence by teaching middle school students about resisting peer pressure, decision-making skills, separating drug myths from facts, communication, healthy ways to reduce anxiety, goal-setting skills, and critical thinking skills regarding advertising and media messages. The lessons are distributed over a three-year period and last approximately 45 minutes each, and teachers receive a thorough training before implementing the curriculum.



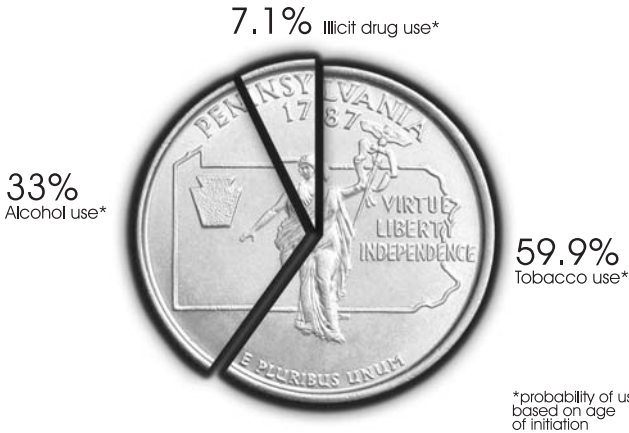
Example site:	Tioga County
Number served:	2,100 students
Benefit minus costs per student:	\$808
Per dollar return on investment:	\$25.72
Total economic benefit resulting from Tioga County implementation:	\$1,696,716
Estimated number of LST programs statewide:	100
Estimated number of youth being served statewide:	20,000
Total potential economic benefit statewide:	\$16,160,000

ECONOMIC BENEFITS ARE BASED ON THE PROGRAM'S SIGNIFICANT LIKELIHOOD TO:

- reduce substance abuse (alcohol, tobacco, and illicit drugs)

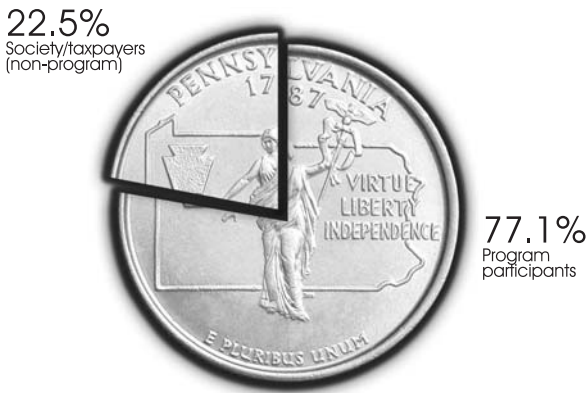
The unusually low program cost and wide reach, combined with high effectiveness, results in a return on investment of over \$25 (per dollar invested).

LifeSkills Training
Percent economic benefit by outcome



Of the substance abuse outcomes, the majority of economic benefit is related to reduced costs related to tobacco use (over 90% are based on reduced tobacco and alcohol use combined).

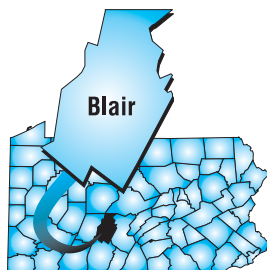
Percent economic benefit
for participants/society



77% of economic benefits related to substance abuse affect the program participants; the other 23% represents economic benefit to non-program participants.

Multidimensional Treatment Foster Care

The Multidimensional Treatment Foster Care (MTFC) program aims to prevent violence, delinquency, and substance use by using foster care as a treatment setting. Youth with chronic and intensive behavioral and emotional problems are placed in an MTFC setting as an alternative to traditional foster care, group homes, or incarceration. In MTFC, community members are recruited and then trained to serve as treatment-providing foster parents. The foster parents are professionally supported through weekly support groups, daily phone check-ins with technical assistance providers, and 24-hour on-call assistance from clinical specialists. MTFC parents provide a high level of supervision at home, school, and in the community. They are trained in communicating to children clear rules and consistent consequences, as well as positive reinforcement of good behavior. MTFC parents also serve in a mentoring capacity, and assist with separating the targeted youth from delinquent peers. The originating family receives family counseling for the duration of the treatment and is taught similar important parenting skills, to increase the opportunity for reintegration. Skills training, therapy, and school support are also used.



Example site:	Blair County
Number served:	6 youth
Benefit minus costs per youth:	\$79,331
Per dollar return on investment:	\$11.14
Total economic benefit resulting from Blair County implementation:	\$475,986
Estimated number of MTFC programs statewide:	3
Estimated number of youth being served statewide:	18
Total potential economic benefit statewide:	\$1,427,958

ECONOMIC BENEFITS ARE BASED ON THE PROGRAM'S SIGNIFICANT LIKELIHOOD TO:

- reduce crime outcomes

Economic outcomes result from an estimated 22% reduction in crime outcomes (based on rigorous longitudinal evaluation).

**Multidimensional Treatment Foster Care
Percent economic benefit
for participants/society**

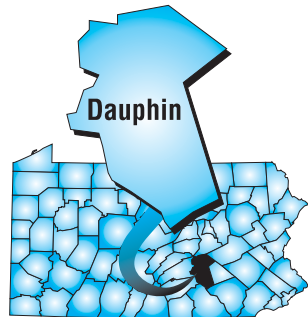


61% of economic benefits are related to reduction in costs to victims; the other 39% are related to reduction in costs to taxpayers.

Multisystemic Therapy

Multisystemic Therapy (MST) is an indicated program, targeted to adolescents who have already had contact with the juvenile court system and their families. The overall goal is to prevent the recurrence of violence and delinquency, as well as to improve the mental health status of serious juvenile offenders by using cognitive-behavioral therapy techniques and working with parents to improve parenting skills, appropriate discipline techniques, and coping skills. Trained therapists are assigned to a small number of families in order to allow the appropriate level of intensive treatment. Therapy sessions occur within each family's home, and the frequency and duration of sessions varies based on each family's needs.

On average, families participate in 60 hours of treatment over four months. The therapist closely monitors each family member's progress.



Example site:	Dauphin County
Number served:	150 youth
Benefit minus costs per youth:	\$16,716
Per dollar return on investment:	\$3.61
Total economic benefit resulting from Dauphin County implementation:	\$2,507,327
Estimated number of MST programs statewide:	12
Estimated number of youth being served statewide:	1,800
Total potential economic benefit statewide:	\$30,088,800

ECONOMIC BENEFITS ARE BASED ON THE PROGRAM'S SIGNIFICANT LIKELIHOOD TO:

- reduce crime outcomes



57% of economic benefits are related to reduction in costs to victims; the other 43% are related to reduction in costs to taxpayers.

Functional Family Therapy

Functional Family Therapy (FFT) aims to prevent further violence, delinquency, substance use, and other mental problems by engaging the entire family in the treatment process and addressing important risk and protective factors. The program is designed in three stages: (1) engagement and motivation; (2) behavior change; and (3) generalization. At the engagement and motivation stage the main goal is to decrease the risks that are related to program dropout and increase the family's motivation and belief that positive change can occur. In the behavior change stage, individualized "change" plans are developed, and interpersonal skills are enhanced. The goal for the generalization stage is to maintain and generalize the successful behavior changes, and to create positive relationships with school and community resources that support continued positive behavior. FFT sessions are delivered by one or two highly trained therapists and are usually conducted in the clients' home. On average, 12 FFT sessions are provided over a period of 90 days.



Example site:	Blair County
Number served:	109 families
Benefit minus costs per family:	\$32,707
Per dollar return on investment:	\$14.56
Total economic benefit resulting from Blair County implementation:	\$3,565,071
Estimated number of FFT programs statewide:	11
Estimated number of families being served statewide:	4,169
Total potential economic benefit statewide:	\$136,355,483

ECONOMIC BENEFITS ARE BASED ON THE PROGRAM'S SIGNIFICANT LIKELIHOOD TO:

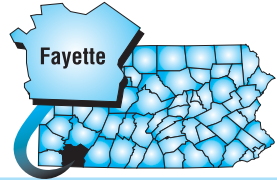
- reduce crime outcomes



57% of economic benefits are related to reduction in costs to victims; the other 43% are related to reduction in costs to taxpayers.

Nurse-Family Partnership

The Nurse-Family Partnership (NFP) program aims to prevent child maltreatment and future violence, delinquency, and substance use of both the parent and the child by improving the mothers' prenatal health, immediate outcomes of pregnancy, personal development, parent-child bonding, and parenting skills. The program accomplishes these goals by assigning a nurse to first-time, at-risk pregnant mothers. The nurse provides home visits during pregnancy and after birth, until the time the child is two years old. The visits occur, on average, every two weeks, and are intensive and comprehensive, allowing nurses to assess the physical and emotional health and needs of the mother and child, provide services in the home, and refer the mother to other services, as needed. This help in the critical early years of child development has been shown to greatly reduce later problems related to delinquency and substance abuse.



Example site:	Fayette County
Number served:	280 families
Benefit minus costs per family:	\$37,367
Per dollar return on investment:	\$3.59
Total economic benefit resulting from Fayette County implementation:	\$10,462,707
Estimated number of NFP programs statewide:	25
Estimated number of families being served statewide:	3,200
Total potential economic benefit statewide:	\$119,574,400

ECONOMIC BENEFITS ARE BASED ON THE PROGRAM'S SIGNIFICANT LIKELIHOOD TO:

- reduce the following outcomes: crime, reliance on public assistance, substance abuse, and child abuse rates
- increase the following outcomes: test scores, high school graduation rates, employment opportunities

**Nurse-Family Partnership
Percent economic benefit by outcome**



74% of economic benefits among the above outcomes are based on crime outcomes. Of the economic benefits for other (non-crime) outcomes, more than half of the economic benefits are related to reduction in child abuse rates.

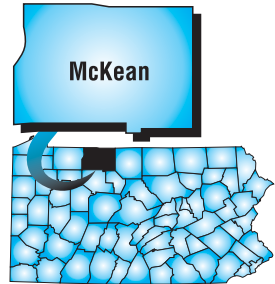
**Percent economic benefit
for participants/society**



Nearly 58% of cost savings related to crime outcomes are based on reduction in victim costs; 33% are based on savings for taxpayers (costs for criminal processing, incarceration, etc.). Over 90% of economic benefits are for society in general (benefiting taxpayers and those non-participants affected secondarily).

Strengthening Families Program 10-14

The Strengthening Families Program (SFP) for parents of children ages 10-14 aims to prevent substance use and other adolescent problem behaviors by teaching parents and their teens and pre-teens communication, problem-solving, rule-setting, parental monitoring, and empathy in order to strengthen bonds between parents and children and foster relationships where clear standards for behavior can be established and followed. The program is delivered in groups of 8-12 families over a seven-week period using trained facilitators who work both separately and together with parent and youth groups.

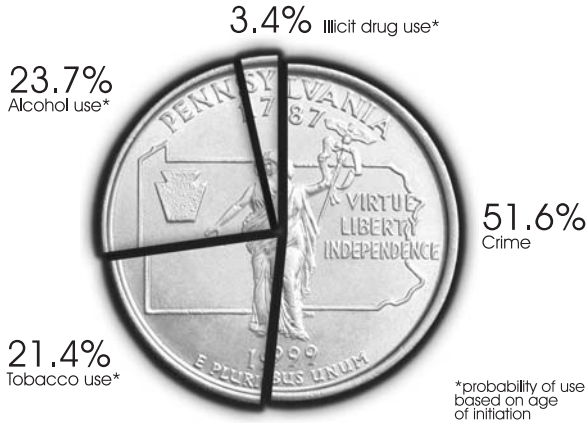


Example site:	McKean County
Number served:	410 families
Benefit minus costs per family:	\$6,541
Per dollar return on investment:	\$7.82
Total economic benefit resulting from McKean County implementation:	\$2,950,180
Estimated number of SFP programs statewide:	15
Estimated number of families being served statewide:	2,000
Total potential economic benefit statewide:	\$13,082,000

ECONOMIC BENEFITS ARE BASED ON THE PROGRAM'S SIGNIFICANT LIKELIHOOD TO:

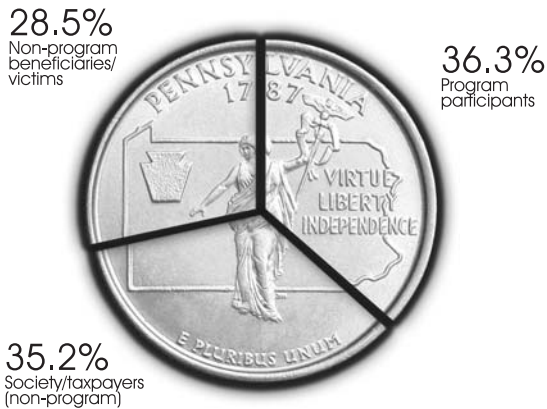
- reduce the following outcomes: crime, substance abuse (alcohol, tobacco, and illicit drugs)

Strengthening Families 10-14 Percent economic benefit by outcome



Approximately half of the economic benefits from Strengthening Families are based on crime outcomes; the remaining benefit is related to substance abuse outcomes.

Percent economic benefit for participants/society



One third of the economic benefits go to the participants themselves (based on reduced lifetime substance abuse on average). A little over one-quarter of economic benefits go toward non-program participants related to crime outcomes (including reduced costs for victims).

Return-on-investment for Prevention Programs in Pennsylvania

	Big Brothers/Sisters	Lifeskills Training	Multidimensional Treatment Foster Care	Multisystemic Therapy	Functional Family Therapy	Nurse-Family Partnership	Strengthening Families Program 10-14
Per dollar return on investment	\$1.01	\$25.72	\$11.14	\$3.61	\$14.56	\$3.59	\$7.82
Benefits minus costs per person served	\$54	\$808	\$79,331	\$16,716	\$32,707	\$37,367	\$6,541
Estimated number of programs statewide	28	100	3	12	11	25	15
Estimated average economic benefit per community	\$13,500	\$161,600	\$475,986	\$2,507,400	\$12,395,953	\$4,782,976	\$872,133
Total (current) potential economic benefit statewide	\$378,000	\$16,160,000	\$1,427,958	\$30,088,800	\$136,355,483	\$119,574,400	\$13,082,000

Incorporating Cost-effectiveness Evaluation into Policy Decisions

The cost-effectiveness potential of the programs featured in this report is significant. Based on well-established and conservative economic analyses, these seven programs represent a potential current return-on-investment for Pennsylvania of over \$317 million. Program funders are certainly more likely to allocate resources toward prevention efforts if those resources not only produce desired outcomes, but are also beneficial in reducing economic burdens for communities and the Commonwealth. The cost-effectiveness figures above are based on rigorous evaluation studies and add further credence to the indication that these programs are “blueprints” for preventing and reducing delinquency and doing so in a resource-efficient manner. Obviously, despite impressive results for certain programs, society is nowhere near replacing criminal justice systems with universal prevention efforts and there will always be a need for police, courts, and corrections. Prevention and intervention will lead to great successes in certain cases and, indeed, achieve grand outcomes such as diverting a criminal path. But such efforts will inevitably fail to help other cases regardless of the strength of the program – just as in our public health efforts to prevent heart disease or cancer. Good prevention programs can always lessen the burden on government programs and service systems if they are well-implemented. The policy challenge is to determine how to divide resources among both prevention and government service sectors to best meet the needs of the population.

It should be noted that not all popular interventions are cost-effective. An example of a well-known program that has been demonstrated to have a negative cost-effectiveness value is Scared Straight (Aos et al., 2004; Greenwood, 2005). The program arranges for adolescents with juvenile delinquency records or at risk for delinquency to be brought to prisons to be lectured by inmates on the consequences of criminal activity. Despite its popularity among the general population, multiple rigorous evaluations and recent meta-analyses have shown the program to be ineffective and possibly even detrimental to youth (increasing the probability of future juvenile delinquency)¹¹. In terms of public resources, it is estimated that the program actually costs society roughly \$11,000 per participant (in 2003 dollars), mostly based on negative program outcomes (in addition to actual program implementation costs).

Policymakers can use the results of cost-effectiveness research to help make informed decisions on what programs to implement for their region. The information may be especially useful when considering alternative programs that address similar needs of the local population. Despite the usefulness of such information, economic benefit often is not the primary goal behind establishing an intervention or prevention program to address local concerns. A more important criterion for program selection is what will address the conditions most relevant for that region based on participant characteristics and needs (in many cases, a “needs assessment” helps policymakers clearly understand how resources should be spent on various programs)¹². Policymakers should also understand how cost-effectiveness rates can be driven simply by the nature of the intervention involved. A more universal intervention (i.e., a program given to a whole grade or population regardless of their level of risk) with low program costs per participant will automatically have a leg up on the path to cost-effectiveness (as will, in an economic sense, the program that delivers benefits in close time proximity to intervention delivery). But the best intervention for a local situation may require a program that involves higher per-participant investment and more targeted efforts.

¹¹ Greenwood, B. W. (2006). *Changing Lives: Delinquency prevention as crime-control policy*. Chicago: The University of Chicago Press.

¹² Ibid., p. 148.

The numbers presented in this report are good ballpark estimates. Readers should understand, however, that cost-benefit calculations such as those presented will vary across settings and could differ substantially from those featured in well-controlled evaluations. Characteristics of the actual participants as well as characteristics of the local setting may impact program effectiveness as well as potential cost savings. A program that should show a high benefit-to-cost ratio may not lead to the same economic benefit if it is implemented poorly and thus does not generate the same participant outcomes. Consequently, monitoring both program quality as well as ensuring that the program is reaching the intended population are two important aspects of ongoing local evaluation of high-quality programs.

Another consideration for policymakers is whether the anticipated financial benefit can be realized in the existing regulatory structure. For example, Pennsylvania counties are allocated state funds for placing youth in secure confinement, and the amount of those funds is determined based on the previous year's usage. Therefore, any funds saved by reducing secure placements would not be recouped by the county, but instead would reflect a reduction in the county's allocation, essentially costing the county money. Thus there is a regulatory disincentive for counties to actually reduce costly secure confinement that might otherwise result in significant cost-savings to the state. Of course, changes in policy could rapidly change local decision-making.

Methodological Considerations

It is important to acknowledge the variation in the cost-effectiveness potential for the programs described in this report. As mentioned above, the specific characteristics of the programs and their participants will impact the degree to which true economic implications resemble those seen in reported research. Variation in the implementation of the program can have consequences (positive or negative) on overall results, and thus on program cost-effectiveness. Differences in characteristics of those delivering the program (e.g., experience levels) or the amount of intervention or dose delivered might influence how well program participants fare. As with program effectiveness in general, a higher level in treatment fidelity of specific implementations to established program standards will increase the chances that cost-effectiveness outcomes will mirror those seen in research evaluations. The degree to which participants in the local implementation resemble those involved in the research study should be assessed.

Estimated costs and benefits presented above are also subject to the economic conditions of the time period in which they were calculated. Cost-effectiveness calculations depend on the costs of various service entities at that point in time. Policy changes may impact changes in welfare delivery or court costs (for instance) that affect dollar amounts over time above and beyond any adjustments based on inflation or discounting. Generally, if the program-effectiveness levels of an intervention program are diminished by diversion from the prescribed implementation strategy regardless of the reason, cost-effectiveness levels will be as well.

Costs of the intervention programs come from documented costs per participant. Program effect levels are based on a national review (meta-analysis) incorporating data from all studies that were deemed to provide a valid representation of participant outcomes. However, some results are based on a very low number of reviewed studies. Any true variation in program effectiveness from those reflected in the meta-analyses will also impact the accuracy of the economic benefits presented above.

The cost-benefit figures presented in this report are based in large part on analyses done by the WSIPP. System cost and benefit amounts (such as costs of welfare delivery, court costs, future income, etc.) are calculated based on either national data or are specific to the state of Washington. The following table shows similarities in per-capita criminal justice system expenses between the two states.¹³ Based on this comparison, the WSIPP estimates are considered comparable to Pennsylvania.

2005 Per Capita Justice System Expenditures

	Police protection	Judicial and legal	Corrections	Total justice system
 Pennsylvania	\$230	\$192	\$114	\$536
 Washington	\$216	\$205	\$105	\$525

Plans are in place to make the software programs used by WSIPP to derive benefit estimates available to other states. When this happens it will be possible to generate more accurate estimates for Pennsylvania that reflect the unique patterns of juvenile crime and dispositions in this state.

¹³ National Archive of Criminal Justice Data, Inter-University Consortium for Political and Social Research, University of Michigan. Accessed online at <http://www.icpsr.umich.edu/NACJD/eecjs/> on Feb. 24, 2008.

Conclusion and Future Direction

As this report demonstrates, in addition to the positive outcomes related to the prevention and reduction of juvenile delinquency, significant fiscal cost savings may also be realized through the use of research-based prevention programs. Prior research has demonstrated the positive outcomes of the PCCD's efforts to promote the widespread use of empirically-supported programs (see Chilenski, Bumbarger, Kyler, & Greenberg, 2007). There is now additional evidence that the Commission's focus on high-quality prevention programming is also generating tremendous potential monetary savings to the Commonwealth and its citizens.

Given the direct relationship between cost-benefit potential and program implementation quality, the PCCD has also shown foresight in establishing an infrastructure to support fidelity and quality in the implementation of these programs. The recent action to require a certification of implementation quality from the program developer for all funded programs is innovative and likely to help maximize the potential cost-benefit of these programs.

It appears the PCCD is poised to further expand its investment in proven-effective (and cost-effective) prevention programs and the infrastructure to support their implementation. Although other agencies of the Commonwealth also support the use of research-based prevention programs, given the significant return-on-investment represented here, there should be greater coordination across agencies to promote and

support these programs. Likewise, state agencies and the General Assembly should undertake to address regulatory and process disincentives that may inhibit the greater use of research-based prevention strategies, and create mechanisms that reward counties for reducing the demand on the juvenile and criminal justice systems. Finally, the Governor's Administration should recognize and embrace the potential role of large-scale prevention in addressing the growing population and financial burden of incarcerated youth and adults.

The Prevention Research Center for the Promotion of Human Development (PRC) was established in 1998 in the College of Health and Human Development (HHD) at the Pennsylvania State University. The Center aims to promote the well-being of children and youth and to reduce the prevalence of high-risk behaviors and poor outcomes for children, families, and communities. During its first ten years, the Prevention Research Center has become the locus of research, technical assistance, and program development in prevention science in Pennsylvania and has developed an international reputation and reach.

The mission of the PRC is to conduct research, and provide training, outreach and technical assistance to policy makers and communities on the prevention of problems (behavioral, academic, mental health, health) and the promotion of positive development in children, youth, families, and communities.

The Center engages in the following six broad activities:

1. Developmental research on the epidemiology of risk and protective factors and their relation to well-being and maladaptation
2. Clinical trials of innovative models to promote competence and prevent maladaptive outcomes for children, youth, families, and communities
3. Research to understand how communities can effectively work together with families, schools, and community groups to promote healthy lifestyles for children, youth, and families
4. Collaborations with the Commonwealth of Pennsylvania and local communities to design, implement, and evaluate preventive interventions
5. Policy-relevant information on best practices in prevention to governments at all levels (international, federal, state, and local)
6. Coordination of prevention training and research activities within the College of Health and Human Development and promotion of prevention research throughout the Penn State system.

